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חוק הפטנטים, תשכ"ז - 1967  
PATENT LAW, 5727 - 1967

ב ק ש ה ל פ ט נ ט  
Application For Patent

אני, (שם המבקש, מענו ולגבי גוף מאוגד - מקום התאגדותו)  
I (Name and address of applicant, and in case of body corporate - place of incorporation)

מספר: Number	152912
תאריך: Date	18-11-2002
הוקדם/נדרח Ante/Post-dated	

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בעל אמצאה מכח הדין.....  
Owner, by virtue of  
שמה הוא Operation of Law  
of an invention the title of which is

מערכות מיקרו מחט

(בעברית)  
(Hebrew)

MICRO NEEDLE SYSTEMS

(באנגלית)  
(English)

hereby apply for a patent to be granted to me in respect thereof

מבקש בזאת כי ינתן לי עליה פטנט

• בקשת חלוקה - Application of Division		• בקשת פטנט מוסף - Application for Patent Addition		• דרישת דין קדימה Priority Claim	
מבקשת פטנט from Application		לבקשה/לפטנט to Patent/Appl.		מספר/סימן Number/Mark	תאריך Date
No. .... מס' .....		No. .... מס' .....			
dated ..... מיום .....		dated ..... מיום .....			
P.O.A.: general/individual-attached/to be filed later-		יפוי כח : כללי			
הוגש בענין..... filed in case .....		המען למסירת מכתבים בישראל Address for service in Israel			
DR. MARK FRIEDMAN LTD. BEIT SAMUELOFF 7 HAOMANIM STREET 67897 TEL AVIV					
חתימת המבקש Signature of Applicant		היום 17..... כחודש Nov..... שנת 2002 of the year of This			
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Ref.: 1975/24

מערכות מיקרו מחט

**MICRO NEEDLE SYSTEMS**

## MICRO NEEDLE SYSTEMS

### FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to micro needles and, in particular, it concerns micro needles used to apply cosmetics as well as to deliver drugs and vaccinations.

5 By way of introduction, the successful application of cosmetics and medical skin treatments, for example cosmetic and medicinal creams, depends on the skin penetration of the cosmetic or medicine.

There is therefore a need for a system to deliver and/or enhance penetration of cosmetic and medical treatments into the skin.

### 10 SUMMARY OF THE INVENTION

The present invention is a micro needle construction for application of cosmetics and/or medicine to the skin and a method of use thereof.

According to the teachings of the present invention there is provided, a micro needle construction for delivery of a substance into the skin substantially according to  
15 any feature or combination of features described below.

According to the teachings of the present invention there is also provided, a method to delivery a substance into the skin substantially according to any feature or combination of steps described below.

### BRIEF DESCRIPTION OF THE DRAWINGS

20 The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

Fig. 1 is an isometric view of a <sup>2</sup> micro needle dispensing ball system that is constructed and operable in accordance with a preferred embodiment of the invention;

Fig. 2 is an expanded view of the region indicated by the letter A of Fig. 1;

5 Fig. 3 is a side view of the micro needle dispensing ball system of Fig. 1;

Fig. 4 is an isometric view of a micro needle dispensing roller system that is constructed and operable in accordance with a preferred embodiment of the invention;

Fig. 5 is a side view of the micro needle dispensing roller system of Fig. 4;

Fig. 6 is a top view of the micro needle dispensing roller system of Fig. 4;

10 Fig. 7 is an expanded view of the region indicated by the letter A of Fig. 4;

Fig. 8 is a schematic cross-sectional view of the micro needle dispensing roller system of Fig. 4; and

Fig. 9 is an expanded view of the region indicated by the letter A of Fig. 8.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 The present invention is a micro needle dispensing construction and method of use thereof.

The principles of the needle dispensing construction according to the present invention may be better understood with reference to the drawings and the accompanying description.

20 The constructions of the present invention, are particularly suited for applying cosmetics or delivering drugs and/or vaccinations into the skin at very shallow depths (up to 100 micron) or other similar substances which can be applied to a surface using micro needles.

Reference is now made to Figs. 1 to 3, which are various views of a micro needle dispensing ball 10 that is constructed and operable in accordance with a preferred embodiment of the invention. Micro needle dispensing ball system 10 has a ball 12 with a plurality of micro needles 14 disposed thereon. Ball 12 rotates within a main body 16 of micro needle dispensing ball system 10. Main body 16 is generally an elongated member with a circular cross-section. Main body 16 is typically hollow and is capable of storing a fluid, which is dispensed by ball 12.

Reference is now made to Figs. 4 to 9 which are various views of a micro needle dispensing roller system 18 which is constructed and operable in accordance with a preferred embodiment of the invention. Micro needle dispensing roller system 18 has a handle 20, a roller 22 and a dispensing container 24. Roller 22 has a plurality of micro needles 26 disposed thereon. Dispensing container 24 is configured to store a fluid, typically under pressure. Dispensing container 24 has an opening above roller 22 to dispense the fluid onto roller 22. The fluid is released from dispensing container 24 by pressing a button 28. The fluid is spread onto roller 22 by a spreading strip (not shown) which is disposed between two rubber strips (not shown).

Micro needle dispensing ball system 10 and micro needle dispensing roller system 18 are either used to prepare the skin prior to treatment with a cosmetic or medicine (pre-treatment), or to apply the cosmetic or medicine itself (treatment), or for use after the cosmetic or medicine has been applied (post treatment). This action of micro needle dispensing ball system 10 and micro needle dispensing roller system 18 improves the effective penetration of the treatment into the skin. For example, micro needle dispensing ball system 10 and micro needle dispensing roller system 18 are used as a pre-treatment device which prepares the skin before applying a cream, like

vitamin C cream, in order to increase the skin permeability and effectiveness of the cream in the skin. Micro needles 14 or micro needles 26 can be constructed with or without holes in each of micro needles 14 or micro needles 26, respectively. When micro needles 14 or micro needles 26 have holes the fluid can be dispensed through the holes of micro needles 14 or micro needles 26, respectively. When micro needles 14 or micro needles 26 do not have holes the fluid is spread on to the exterior of micro needles 14 or micro needles 26, respectively. Micro needles 14 and micro needles 26 can be formed in various shapes, for example, but not limited to, truncated pyramids or cylinders. Micro needles 14 and micro needles 26 are typically formed integrally with ball 12 and roller 22 respectively. Alternatively, micro needles 14 and micro needles 26 can be formed on chips which are then disposed on ball 12 and roller 22, respectively. A person ordinarily skilled in the art of producing micro needles will know how to produce micro needles on chips or integrally with ball 12 or roller 22.

Additionally, it will be appreciated by those skilled in the art, that various other micro needle structures could be used to perform the above procedures. By way of example, but not limited to, stamping the skin with a micro needle array, typically mounted on a chip. The micro needle array is either stamped on the skin to prepare the skin prior to treatment with a cosmetic or medicine (pre-treatment), or to apply the cosmetic or medicine itself (treatment), or for use after the cosmetic or medicine has been applied (post treatment).


It will be appreciated by persons skilled in the art that the present invention is not limited to what has been particularly shown and described hereinabove. Rather, the scope of the present invention includes both combinations and sub-combinations

of the various features described hereinabove, as well as variations and modifications thereof that are not in the prior art which would occur to persons skilled in the art upon reading the foregoing description.



WHAT IS CLAIMED IS:

1. A micro needle construction for delivery of a substance into the skin substantially according to any feature or combination of features described above.
2. A method to delivery a substance into the skin using micro needles substantially according to any feature or combination of steps described above.

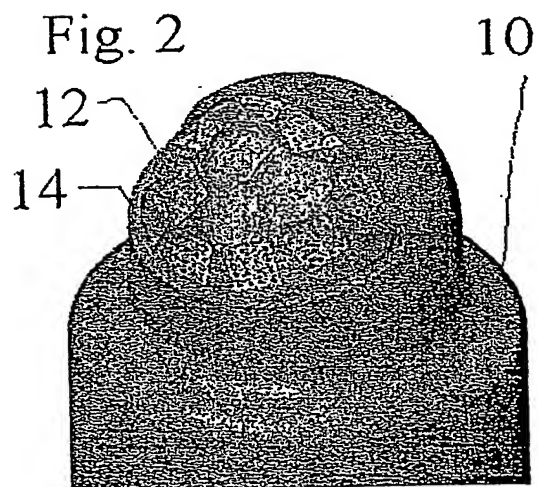
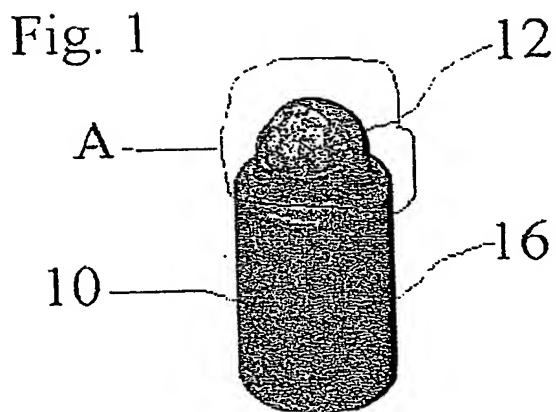
  
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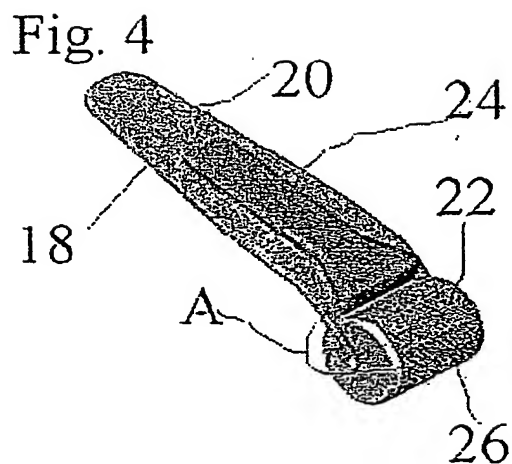
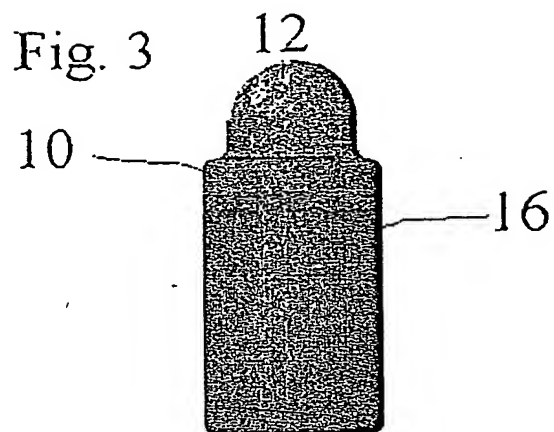


Fig. 7

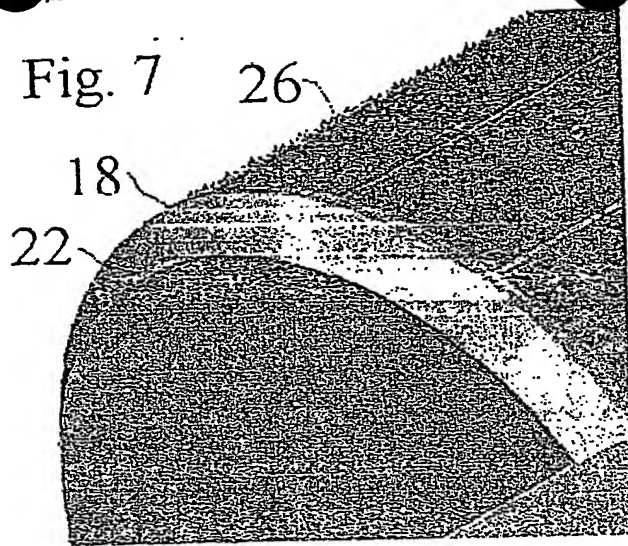


Fig. 8

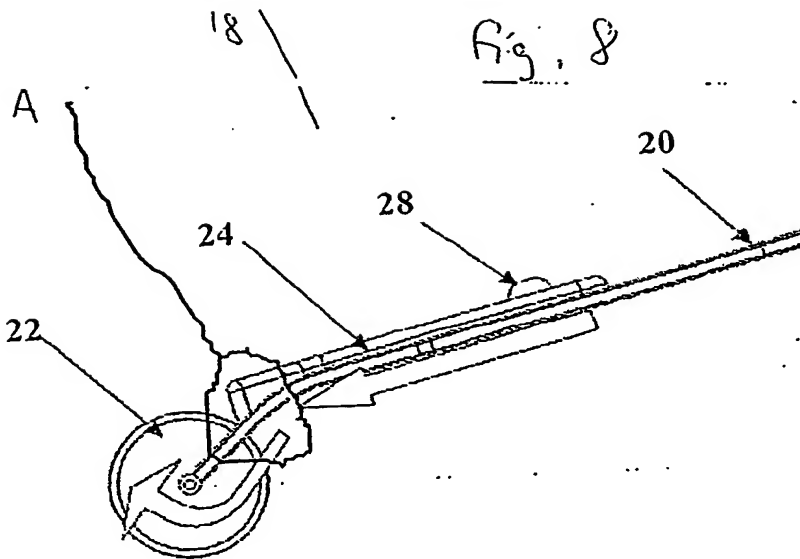


Fig. 9

